

## Draft MoM CEOS Working Group on Disasters Meeting # 9

Version 3 as of April 20, 2018

The CEOS Working Group on Disasters (WGDisasters) held its eighth meeting from March 13<sup>th</sup> to 15<sup>th</sup> in Brussels, Belgium, at the invitation of the European Commission.



**Participants:** Spyros Afentoulidis (ERCC), Philippe Bally (ESA), Jordan Bell (NASA – by phone), Francesca Cigna (ASI), Stephen Clandillon (SERTIT-ICube, IWG-SEM Chair), Agwilth Collet (CNES), Lorant Czarán (UNOOSA), Jens Danzeglocke (DLR), Helene de Boissezon (CNES), Andrew Eddy (Athena Global, WG Disasters Secretary), Mauro Facchini (EC), Pierric Ferrier (CNES), Stuart Frye (NASA – by phone), David Green (NASA, WG Disasters Vice-chair), David Hodgson (for UK Space Agency), Steven Hosford (CEOS EO), Bob Kuligowski (NOAA – by phone), Chuanrong Li (AOE/CAS), Ziyang Li (AOE/CAS), Jean-Philippe Malet (EOST), Andrew Moulthan (NASA – by phone), Akiko Noda (GEO Sec), James Norris (GEO Sec), Erik Ola Nordbeck (EC Copernicus), Stephane Ourevitch (Copernicus Communications), Dorella Papadopoulou (Argans for ESA), Bobby Emmanuel Piard (CNIGA Haiti – by phone), Mike Poland (USGS), Jose Miguel Roncero-Martin (EC – ECHO), Stefano Salvi (INGV), Peter Sruyt (EC Copernicus), Lingli Tang (AOE/CAS), Deodato Tapete (ASI), Peeranan Towashiraporn (ADPC – by phone), Elseke Van Dalfsen (KNMI), Françoise Villette (EC- Copernicus), Dongjin Wang (AOE/CAS), Keran Wang (UNESCAP – by phone), Simona Zoffoli (ASI, WG Disasters chair).

The times indicated in the agenda correspond to the local times in Brussels.

### DAY 1 (Tuesday, March 13<sup>th</sup>)

13:00	<b>01 - Opening and welcome</b>	Mauro Facchini, EC Copernicus Programme Simona Zoffoli
13:15	<b>02 - Tour de table of participants</b>	All
13:25	<b>03 - Logistics</b>	Françoise Villette
13:30	<b>04 - Outstanding WG business :</b>	Andrew Eddy, Simona Zoffoli

	<b>MoM from teleconference #20: Review of open actions</b>	
14:15	<b>05 - Meeting objectives</b>  <b>Reporting on activities – GSNL, GEO-DARMA, Haiti RO, Landslide Pilot, Geohazards Lab</b>  <b>Defining new demonstrators: Volcanoes, seismic hazards and floods</b>  <b>Strategy for communicating the success of the pilots and engaging demonstrator communities</b>  <b>Engagement with new partners – IWG-SEM joint session, report on AmeriGEOSS cooperation</b>	Simona Zoffoli, Andrew Eddy
14:30	<i>Group Photo</i>	
14:45	<i>Coffee Break</i>	
15:00	<b>06 - European Commission's Copernicus Emergency Management Service</b>	Francoise Villette, Peter Spruyt
15:30	<b>07 – GSNL Session</b> <ul style="list-style-type: none"> <li>● Results from supersites</li> <li>● New supersites</li> <li>● Vision for future</li> </ul>	Stefano Salvi
17:30	<i>ADJOURN</i>	

## DAY 2 (Wednesday, March 14<sup>th</sup>)

09:00	<b>08 – GEO-DARMA</b>	Andrew Eddy
10:30	<i>Coffee Break</i>	
10:45	<b>09 – Landslide Pilot</b>	Jean-Philippe Malet
11:45	<b>10 – Geohazards Lab</b>	Philippe Bally, Stefano Salvi, Dorella Papadopoulou
12:30	<i>Lunch Break - Canteen Charlemagne Building</i>	
14:00	<b>11 – Recovery Observatory</b>	Helene de Boissezon, Boby Piard (remotely)
15:30	<i>Coffee Break</i>	
16:00	<b>12 – DRM Demonstrator development</b> <ul style="list-style-type: none"> <li>a) Flood demonstrator (45 min)</li> <li>b) Seismic hazards demonstrator (45 min)</li> <li>c) Volcano demonstrator (and report on volcano pilot)</li> </ul>	Bob Kuligowski (remotely), Stu Frye (remotely) Philippe Bally, Dorella

	<b>Objective C) (60 min)</b>	Papadopoulou Mike Poland, Simona Zoffoli
18:30	<i>ADJOURN</i>	

### DAY 3 (Thursday, March 15<sup>th</sup>)

9:00	<b>13 – Joint session with International Working Group of the Satellite Emergency Mapping (IWG-SEM)</b> <ul style="list-style-type: none"> <li>● Introduction of IWG-SEM membership and activities</li> <li>● General discussion on possible collaboration</li> </ul>	Stephen Clandillon, Chair of IWG-SEM (SERTIT)
10:30	<i>Coffee Break</i>	
11 :00	<b>14 – Strategy for communications and engagement</b> <ul style="list-style-type: none"> <li>● Target audiences</li> <li>● Website update</li> <li>● Pilot user testimonials</li> <li>● Handbook distribution</li> <li>● User engagement through demonstrators</li> </ul>	Simona Zoffoli, Andrew Eddy
11:45	<b>15 - News from agencies:</b> <ul style="list-style-type: none"> <li>● Round table of news from agencies</li> </ul>	All
12:15	<b>16 – Conclusion, Summary of follow-up action points and Next WG Disasters meeting</b>	
12:30	<i>Lunch @ DG ECHO, ECHO MEET 0/MED3 AUD, 79 rue Joseph II</i>	
<b><i>Visit of DG ECHO EU Emergency Response Coordination Centre (ERCC), 79 rue Joseph II</i></b>		
14:45	<b>17 – Site visit of European Commission's ERCC</b> <ul style="list-style-type: none"> <li>● Visit</li> <li>● General discussion on work of ERCC</li> </ul>	Francoise Villette Spyros Afentoulidis
16:30	<i>END of MEETING</i>	

#### Day 1

13:00	<b>01 - Opening and welcome</b>	Mauro Facchini, EC Copernicus Programme Simona Zoffoli
-------	---------------------------------	---

Simona Zoffoli welcomed the participants and introduced Mauro Facchini, the Head of the Copernicus Programme. Mauro welcomed the participants to Brussels and made a brief presentation on the Copernicus Programme's disaster activities.

13:30	<b>04 - Outstanding WG business : MoM from teleconference #20: Review of open actions</b>	Andrew Eddy, Simona Zoffoli
-------	---	-----------------------------

The Minutes of Meeting (MoM) from telcon #20 were adopted without any changes. The open actions were reviewed by the group. The table below summarizes the open actions at the end of the meeting. A table at the end of these MoM documents closed actions.

#	Action	Actionee	Due	Status/ Comments
<b>M9/1</b>	Request to have archive of old webstories so they can be consulted.	A. Eddy and K. Hollister	End of April	Open.
<b>M9/2</b>	Document Ecuador earthquake activation experience (in the form of a short article or PPT) from a lessons learned perspective, including all satellite-related activity	Francoise Villette and Dorella Papadopoulou, in consultation with International Charter and GDACS team.	July 2018	Open.
<b>M9/3</b>	Update CEOS workplan input for WG Disasters and send to S Hosford	Simona Zoffoli	26 March	Open.
<b>M9/4</b>	CNES and CSA to indicate to S Salvi if they will continue to provide data to Iceland supersite.	Christine Giguere and Pierric Ferrier	April 2018	Open.
<b>M9/5</b>	Update the EO Data Access Procedures (and provide guidelines for updating)	Stefano Salvi to provide guidelines to DCT; DCT members to update for each agency.	WGD# 10	Open.
<b>M9/6</b>	Propose text to inform new supersite PIs that data requests should be made within six months of site creation, and that a failure to request data may result in data quota being revoked	Jens Danzeglocke	Telcon 21	Open.
<b>M9/7</b>	Inform the GSNL community of automated processes that exist within NASA and survey the needs within the community for such support	David Green and Stefano Salvi	WGD# 10	Open.
<b>M9/8</b>	Inform the GSNL community of capacity building efforts (INSAR, stereo, modelling – compile list of existing initiatives for circulation) and make links to CEOS, AmeriGEOSS, AfriGEOSS.	David Green, Mike Poland	Telcon 21	Open.
<b>M9/9</b>	Look at existing supersites list and make recommendations on which ones might be expanded to include other hazards and work on risk assessment	Stefano Salvi and David Green	WGD# 10	Open.
<b>M9/11</b>	Share GEO-DARMA regional assessments	Andrew Eddy	March 2018	Open.
<b>M9/12</b>	Follow-up to see who requested RSAT-2 data within landslide pilot and what the approved quota was	Dalia Kirschbaum	Telcon 21	Open.
<b>M9/13</b>	Document links of existing WG activities to WGISS systems and software; organise PPT presentation from WGISS (ESA's Mirco Albani) at next WG telcon	Dorella Papadopoulou and Philippe Bally (lead for document) with input from Philippe Bally, Helene de Boissezon, Mirco Albani	Telcon 21	Open.

#	Action	Actionee	Due	Status/ Comments
M9/14	Add Capacity Building slide to Geohazards Lab PPT.	Dorella Papadopoulou	Telcon 21	Open.
M9/15	Capture the long-term aspect of capacity building in demonstrator proposal.	Mike Poland	End of March	Open.
M9/16	Circulate Juliet Biggs' article on volcano pilot	Mike Poland	End of March	Open.
M9/17	Share map of exposed populations (volcano hazard)	Mike Poland	End of March	Open.
M9/18	Contact CSA and JAXA to request data quota.	Philippe Bally	End of March	Open.
M9/19	Send IWG-SEM Guidelines to WG for comment.	Stephen Clandillon to send to Andrew Eddy for distribution	Telcon 21	Open.
M9/20	Send website updates to Andrew and Simona.	Each thematic section leader	Telcon 21	Open.
M9/21	Produce overview of UR2018 week/agenda from WG perspective	David Green	End of March	Open.
M9/22	Presentation on UK Space Agency activities at next WG.	David Hodgson	WGD# 10	Open.
M9/23	Explore shared document systems to exchange project updates.	Simona Zoffoli	Telcon 21	Open.
T20/4	Demonstrator/thematic leads to revamp CEOS website in their sections. Simona will write to pilot leads requesting a clear link between pilot outputs and demonstrator proposals.	Simona Zoffoli; demonstrator and pilot leads	Telcon 21	Open. Link to M9/20
M7/2	Document need for on-going RSAT-2 data use beyond pilot end (for a period of 12-18 mths for publications for example, or for maintaining a time series for volcano monitoring) and send to Christine Giguere	All pilot leads	Telcon 21	Open
M7/3	Make a case to MDA about extension of data license beyond end of pilots.	Christine Giguere	Telcon 21	Open
M5/19	Inform WGD Chair of publications and outreach activities	Each pilot/ demonstrator lead	Once a month	Open

During the discussion on the actions, a new action was created, M9/1, to raise the issue of archiving the old WG Disaster webstories, which are not currently available online. Another new action, M9/2, stemmed from the discussion on lessons learned from use of satellite imagery in Ecuador after the earthquake.

14:15	<p><b>05 - Meeting objectives</b></p> <p><b>Reporting on activities – GSNL, GEO-DARMA, Haiti RO, Landslide Pilot, Geohazards Lab</b></p> <p><b>Defining new demonstrators: Volcanoes, seismic hazards and floods</b></p>	Simona Zoffoli, Andrew Eddy
-------	--	-----------------------------

	<p><b>Strategy for communicating the success of the pilots and engaging demonstrator communities</b></p> <p><b>Engagement with new partners – IWG-SEM joint session, report on AmeriGEOSS cooperation</b></p>	
--	---	--

Andrew Eddy and Simona Zoffoli made a presentation on the objectives of the meeting. The meeting aims to report on existing activities, discuss possible new demonstrators being established, discuss the strategy for communicating the work of the WG and to engage with new partners, including through a joint working session with the International Working Group on Satellite-based Emergency Mapping (IWG-SEM). Andrew presented a comparative slide showing the difference in objectives and approach between the thematic pilots and the new demonstrator activities. The discussion on the demonstrators took place at the end of the second day.

15:00	<p><b>06 - European Commission’s Copernicus Emergency Management Service</b></p>	Francoise Villette, Peter Spruyt
-------	--	----------------------------------

Ing Peter Spruyt made a presentation on the Emergency Mapping Service, describing both Rapid mapping and Risk and Recovery, under the Copernicus programme. The Service is a free and open service, and can be readily triggered by a wide range of institutional actors. There is a close cooperation with the International Charter to not duplicate efforts. For triggering outside Europe, the simplest process is to work with the closest European Delegation. A validation team supports each activation with feedback and recommendations. A discussion ensued on the issue of liability tied to risk assessment, and on uncertainty in risk assessment products. The EMS is closely related to other Copernicus services such as Land Service and Climate Change Service. The Risk and recovery Service has been activated all over the world, and for applications as general as wall to wall risk products calculating exposed assets per pixel (Finland recently), to specific risk products for specific geographic areas. Very recently, Risk and Recovery was activated to support work of the CEOS Recovery Observatory in Haiti, and this will be presented in the RO discussion on Day 2. Two activations are planned: one on built-area damage and reconstruction in Jeremie and Les Cayes; another on environmental impact in coastal mangroves, agricultural areas and the Makaya Park, including coastline mapping from Jeremie to Les Cayes. A third activation is being considered to look at road networks in vulnerable areas.

Prior to the GSNL session, a short discussion was held with Steven Hosford on the CEOS workplan comments, as the updated version of the workplan is due shortly after the meeting. The comments were noted and an updated version will be sent late March to Steven.

**Action M9/3** Provide new version of workplan to S Hosford; in future, do not change text of background on deliverable, but add column on status.

Steven Hosford expressed a desire to see more deliverables in the CEOS workplan for the WG Disasters, to better capture and promote the activities of the group.

15:30	<b>07 – GSNL Session</b> <ul style="list-style-type: none"> <li>● <b>Results from supersites</b></li> <li>● <b>New supersites</b></li> <li>● <b>Vision for future</b></li> </ul>	Stefano Salvi
-------	--	---------------

Stefano Salvi made a presentation on the GSNL. Simona Zoffoli began the session by thanking Stefano for the recently received report from the Iceland supersite. The report was judged to be outstanding and should serve as a model for future reports from other supersites. A discussion ensued on whether a supersite needs approval from the Plenary to be renewed. In fact, the supersites are permanent unless otherwise stated and once the two-year report is accepted, the supersite continues without new approval. Reports are this presented for information rather than for decision. Stefano and Jens indicated that they were waiting for an answer from CSA and CNES on whether they would renew their support through new data for the Iceland site – once this information is provided, Jens will provide Stefano with the usual Renewal Letter for the Supersite PI.

**Action M9/4** CNES and CSA to indicate if they will continue to contribute data for Iceland supersite.

Stefano indicated that there is a need to update the EO Data Access Procedures. While the information on data policy is still correct, the specific procedures for how to access specific data sets are now outdated. Stefano agreed to take an action to frame this question for the DCT so the agencies can easily answer and update the procedures.

**Action M9/5** Update EO data access procedures (according to guidelines prepared by S Salvi).

There was a question about Pleiades data being available through the GEP. CNES responded that the data may be available in metadata format for viewing but the data could not be downloaded.

There was a discussion on whether at one point supersites might be closed if no data was requested after a certain period. A recent example was cited where data has still not been requested, a year after the site. It was agreed that site PIs should be informed that they are expected to request data within six months (after having received the formal Acceptance Letter). If no data is ordered, the DCT has the choice to cancel the quota. Jens Danzeglocke as DCT chair will propose text to this effect and it will be included in acceptance letters for future sites.

The group felt that there should be an integrated system for providing routine monitoring products to the supersites, and that more could be done from a capacity building point of view. Some partners are prepared to support this automation. ARIA (NASA) and the Alaska SAR Facility were cited as possible examples where such services exist.

**Action M9/7** Inform the GSNL community of automated procedures that exist within NASA and survey them on their needs for this type of tool

**Action M9/8** Inform the GSNL community of existing capacity building initiatives (make a list), so that they can tap into this work. The short list included Massive Open Online Courses (MOOCs), ESA training



(INSAR browse hi-res service on GEP). GSNL is seeking funding for capacity building from the EC. Other suggestions are welcome.

Stefano presented some results from various supersites. There is a comprehensive time series in C-band over Marmara. A Risk and Recovery activation took place over Goma, Congo DR; new VHR DEM was generated. 1.5 million people live in close proximity to this poorly monitored and active volcano. All the Risk and recovery data used for the activation will be downloadable from the Copernicus website.

There was a discussion about possible future supersites, and the linkages to demonstrator activities. Stefano mentioned that a proposal for a multihazard supersite in Peru (Cordillera Blanca and Nevado Coropuna) has been received in draft form but needs completion. Also Colombia and the Philippines have expressed interest in creating a supersite. The Peruvian space agency, CONIDA, has launched in 2016 their own VHR optical minisatellite (PERUSAT, 70cm resolution). They could be approached to join this group, even if they are not a CEOS member. They may be willing to contribute data. to GSNL. Stefano also indicated there may be a future request for a landslide supersite. The discussion evolved towards the discussion of multi-hazard supersites, and the linkages to GEO-DARMA and the demonstrators. There is strong interest in multi-hazard supersites in areas where risk is significant and complex. It was suggested that the group looks at the list of existing supersites and see if any might be expanded to cover other hazards. The criteria for expansion might include multi-hazard, multi-thematic components.

**Action M9/9** Look at existing supersites list and make recommendations on which ones might be expanded.

ASI and DLR pointed out that these expanded supersites must have a clear science-driven activity and should not be in competition with existing commercial activities that consider risk.

It was pointed out the GSNL initiative has been greatly improved over the last few years, with the creation of many new sites and the revamping of existing ones. With a new focus on capacity building and demanding results and feedback from the supersite coordinators, this will lead to even better results. There was a long discussion on how many supersites would be an ideal number, and if the agencies felt there needs to be a cap on the number of supersites. While there is no cap at present, the volume of data available is not infinite and thus if there were many further sites, each site would eventually have less data. It is unclear whether the supersites are being set up to propose long-term monitoring of sites which are of extraordinary scientific interest, or to answer clear scientific questions, or both. It is possible that some supersites in the future could be discontinued, either because of lack of interest from the scientific community, or because the main questions at the site have been answered, or because the scientific activity does not meet the conditions for a Supersite anymore. Several people felt that there is great value in data continuity, and that at most supersites the scientific questions are on-going and evolving. After some discussion, it was agreed that when we reach 15 supersites, we will evaluate the situation and consider whether some supersites should be closed before accepting additional ones.



A new GSNL website has been developed and is online ([geo-gsnl.org](http://geo-gsnl.org)); linkages between this site and the CEOS site should be made. There was a specific request that the CEOS logo and agency logos appear on the specific individual sites where work is being showcased. On the CEOS website update, a GSNL section will be added with a link to the full site.

Day 2

09:00	<b>08 – GEO-DARMA</b>	Andrew Eddy
-------	-----------------------	-------------

Andrew Eddy presented an overview of the status of GEO-DARMA, including the process used to define region DRR priorities in Asia and Africa (done) and in the LAC region (underway), and the selection by the Steering Committee of four projects for further development (three in Asia, one in Africa). Champions from the three Asian projects joined for the discussion and presented their projects. Peeranan Towashiraporn from ADPC presented the Mekong Flood project, and Keran Wang from UNESCAP presented the Urban Monitoring project and the Coastal Mapping in Pacific Islands project. The African champion was unable to join the meeting, but the project was presented by Andrew. The WG indicated that GEO-DARMA had made rapid progress in the last few months and congratulated the team. A decision will be made in the first week of April whether or not to go forward to SIT for project approval for the Mekong Flood project. The other projects are being developed for the fall of 2018, as key project decisions are still being taken on the scope and nature of the work.

ESA indicated a parallel flood monitoring project at ESA is working in some of the same areas but saw no need to connect the projects. UK Space Agency indicated that the UK has an International Partnership Programme promoting space data applications. The programme is well-funded and open to all. David will circulate information on the programme.

**Action M9/10** Circulate information on the IPP.

The group asked Andrew to share the regional assessments that have been developed and the final regional priorities text retained for Africa and Asia.

**Action M9/11** Share regional assessments with the WG.

China’s AOE indicated that GEO-DARMA should consider using a full range of data sets, including drone and in-situ data. Andrew indicated that this was the philosophy, to use all available data sets. They also indicated that local partners will be critical to implementation, especially in Asia. The driver for these projects should be long-term sustainability. Many projects have been undertaken in the region but after the project is over, there is no vision for sustainability. It was suggested that the PPT materials be augmented to include which data are being used for each project.

It was felt that when possible, these projects should address multiple hazards.

10:45	<b>09 – Landslide Pilot</b>	Jean-Philippe Malet
-------	-----------------------------	---------------------

--	--	--

Jean-Philippe Malet presented the Landslide Pilot. Work has begun in Nepal and data is being collected. DLR indicated that data is collected over Trishuli, and coverage of another AOI (Karnali) is supported, but a third region was not possible due to data conflicts. The Pacific Northwest will not be possible for DLR given the conflict with other acquisitions for the commercial partner.

There seemed to be contradiction between the information in the PPT and the data table, especially with regard to the RSAT-2 quota. It was agreed that the pilot team would follow-up to see what the approved RSAT-2 quota was and who requested it within the team.

**Action M9/12** Follow up to see who requested RSAT-2 data for the pilot and what the quota was.

The landslide pilot is working in areas where there are many other hazards. This may be an example of a multi-hazard pilot, even if it is driven by landslides. In Haiti for example the landslide risk is tied to other hazards. Across the Caribbean, the work is multi-hazard, multi-sensor, multi stakeholder and multi-actor. The landslide pilot has been closely coordinating their work with the RO team, and the RO team in Haiti has provided direct linkages to end users, both inside the RO area and outside the RO, where small landslide sites are of concern to the Haitian Bureau des Mines et de l’Energie (BME).

In Africa, a new pilot area was started, that is closely linked to needs on the ground and real end users.

Ziyang Li presented the work in southwest China. China has been working with their own data for now, but are considering whether they will make a data request under the pilot for access to other sensors.

11:45	<b>10 – Geohazards Lab</b>	Philippe Bally, Stefano Salvi, Dorella Papadopoulou
-------	----------------------------	---

Philippe Bally presented the Geohazards Lab. The users here are not civil protection agencies, but rather the geoscience centres that work with end users. The Geohazards Lab is an EO processing environment , building on the success of the GEP (previously demonstrated within the Seismic Hazards Pilot) with a focus on federating resources that enables scientists to pool resources to achieve better results. The French BRGM is a partner through the Geohazards Office, a joint project with CNES and ESA. The Geohazards Office is an activity looking at scientific animation in the context of the Geohazards Lab.

Within Geohazards Lab, the Geohazards Office is an expert team looking at EO based processing with the aim to better characterize tools and hosted services and demonstrate their utility in the geohazards community. DLR asked if they were to be involved in the Office. For the time being, the Office is made up of BRGM, CNES and ESA, and other agencies or community partners are welcome but depending on their willingness and on a best effort basis; they will be consulted in the course of the activity. The consultations will involve the whole community, not just other agencies. NASA asked when this process would extend beyond Europe. Through the GEP, 12 countries worldwide are participating as users. This will be expanded gradually. In all there are 71 users today.

GEP has become a WGISS pilot, and WGISS leadership is being shared by Langley and Goddard, so the GEP may soon be extended to the US through WGISS. CNES pointed out that the 'Dotcloud' platform used by the RO is another WGISS pilot activity. The WG requested that the links to WGISS pilots in WG activities be better documented.

**Action M9/13** Document the links to WGISS systems and software in a short document.

It was felt that the WG reps should reach out to the WGISS reps within their agencies when they exist and exchange information.

While the Geohazards Lab activity is not in itself capacity building, the demonstrator activities that will use the labs is (for instance the seismic hazard activity). It was felt that the capacity building activity in relation to the labs was unclear. It was agreed that a Capacity Building slide would be added to the materials presented at the meeting.

**Action M9/14** Add Capacity Building slide to the Geohazards Lab presentation.

14:00	<b>11 – Recovery Observatory</b>	Helene de Boissezon, Boby Piard (remotely), Agwilh Collet, Deodato Tapete, Francesca Cigna, Jens Danzeglocke
-------	----------------------------------	--

Boby Piard the head of CNIGS in Haiti joined the group by phone and presented their strong interest and commitment in this project, which they co-lead with CNES. Agwilh Collet and Helene de Boissezon (CNES), Francesca Cigna and Deodato Tapete (ASI), and Jens Danzeglocke (DLR), made a joint presentation on their respective roles within the RO.

The project is well underway as it begins its second year. A major event will take place in Haiti May 8 and 10-11, a User Workshop showcasing results to date and interacting with users on the products. There is a lot of work going into the development of a Capacity Building Plan. The group has recently reached out to WGCapD (presentation made to their last meeting), but the lead for this activity is the CNIGS, and they will present this plan to the World Bank and UNDP for support. The plan includes both developing capacity to use and capacity to produce. On the production side, a major component of the plan is the development of a SAR processing capability within the CNIGS. Help on this front will be required from SAR agencies. The CNIGS recently activated Copernicus Emergency Risk and Recovery service through the EU delegation in Haiti. For this activation, SPOT and Pleiades imagery already acquired for RO needs will be provided free of charge through CEOS. CSK data will be acquired through eGeos. Francoise Villette expressed her satisfaction to see that through the RO, Copernicus had tapped into a much wider community of users in Haiti. This is an example of successful collaboration. NASA expressed its desire to see the success of the RO broadened to a regional context, and wondered if there would be, after this year's User Workshop, a similar event targeting regional users. The suggestion was noted. CNES mentioned that CEOS partners are invited to attend RO meetings, in order to envisage further collaboration (data provision, value added products, capacity building) to this collaborative pilot.

16:00	<b>12 – DRM Demonstrator development</b> <b>a) Flood demonstrator (45 min)</b> <b>b) Seismic hazards demonstrator (45 min)</b> <b>c) Volcano demonstrator (and report on volcano pilot Objective C) (60 min)</b>	Bob Kuligowski (remotely), Stu Frye (remotely) Philippe Bally, Dorella Papadopoulou Mike Poland, Simona Zoffoli
-------	---	---

The demonstrator discussion began with an open review of the slide presented the day before by Andrew, highlighting the main differences between the pilots and the demonstrators. A copy of the slide material is provided below for easy reference.

	<b>Pilot</b>	<b>Demonstrator</b>
Objectives	Prove feasibility, benefit	Demonstrate sustainability, cost/benefit
Physical Scope	Limited geographic areas	Driven by user demand – may be limited or global in reach
Duration	Three years	Three years
Leadership	CEOS and technical partners	Overall demonstrator led by CEOS but individual projects seek user lead
Technical elements	Prime driver	May be components but mostly builds on successful elements of pilots
Financing	In-kind contributions of data and services	In-kind contributions of data and services
Users	End users asked for documented input on usefulness and benefit	End users and practitioners help define demonstrator and work with CEOS teams to achieve sustainability

The participants felt that the user line of the table should be further up the table, as this was a key element. The issue of sustainability under objectives is also key, and these sustainable concepts need to be scalable. The demonstrators aim to integrate, coordinate, and federate through cooperation. With respect to the pilot, demonstrators should try to enlarge the team. One participant felt a good analogy

was the TRL analysis. The pilots are comparable to a TRL 4, while the demonstrators are TRL 6 or 7. Several people agreed that this was a useful analogy, and that there are technology readiness levels, but also applications readiness levels, and service readiness levels. Some agencies were uncomfortable with the term service for the demonstrators. The demonstrators remain a science-driven activity, even if the sustainable activity they lead to may one day be a service. These demonstrators are pre-operational. One clear objective not listed is to show the value of EO for DRM. It was agreed that the table provides a good starting point for the comparison of pilots and demonstrators.

#### Volcano Demonstrator

Mike Poland presented the demonstrator development activity. The demonstrator would capitalize on the pilot's success in documenting previously unknown activity (e.g. Cordon Caulle). In some cases, faulting also causes deformation, and understanding that allows civil protection agencies to lower alerts (also of value). The demonstrator will build on the pilot success in determining what mix of data to use. Low latency seems in many cases to be the key. With CSK imagery for example, there is notification that a scene will be acquired a few hours ahead of time, which means the science team can generate a product within twelve hours of satellite passes. The issue of training was raised. It is clear from the pilot that the demonstrator needs to include some capacity building components, including extended courses. But what would these extended courses look like? Typically these courses are not semesters of study but a thesis. How do we capture this?

**Action M9/15** Capture the long-term aspect of capacity building in demonstrator proposal.

**Action M9/16** Circulate Juliet Biggs' article on pilot.

The World Bank is organizing a conference in Bali next year about volcanoes and this may be a good place to reach out to people interested in long-term sustainability of demonstrator activity. The pilot was quite active with regard to Mt Agung (Bali), and Mike served as the coordinator between the pilot team and VDAP, which provide support to local authorities.

It is hard to prioritize within the demonstrator activity. Strato volcanoes are the highest hazard. There are large unmonitored areas such as most of Africa, which has volcano activity in the East Africa Rift, Mt Cameroon, and Cape Verde, as well as Congo. One way to prioritize would be to show a map of exposed population, and to overlay that with known monitoring activities, to highlight gaps. Can we move this volcano population index to a threat index?

**Action M9/17** Share with WG map of exposed populations.

Mike indicated he would be surprised in the future to see event supersites for volcanoes. There is a consensus that volcano erupt as part of a cycle of activity and should be regularly and constantly monitored. Sinabung is one example.

The WG concluded it needed (by end of March) a more detailed implementation plan, including estimates of volumes of data. It would also be good to include some user endorsements from the pilot.

The implementation plan should include caveats on responsibility and ensure that the science activity is not misconstrued as an operational programme.

There is a need for closer coordination between GSNL and the Volcano Demonstrator, to ensure that the activities do not overlap but complement each other. There are big differences between the two. The demonstrator remains a team approach, whereas supersites promote open science and open participation. The demonstrators should be more open than the pilots though, and should be better advertised so new partners can join. The main goal of the demonstrator should be to help volcano observatories fill the monitoring gap. In this respect, a plan to involve the observatories should be included.

#### Flood Demonstrator

Stu Frye presented on behalf of the Flood team. The pilot was very successful technically, and engaged some key users in the pilot sites. The Demonstrator needs to focus on the transition from hazard to risk, on urban flooding, which is still poorly addressed by satellites despite advances, and on the linkages between global, regional and local levels. The Flood Team provided a report on its work with Charter data, and the feedback from that report will be presented at the next telcon of the group, after the Charter meeting in April. The Flood Team is expanding to new agencies, and CNES has requested more time to respond to the request made to them to participate. CONAE has also indicated a willingness to participate and a call with them is planned for later in March (they were unable to attend this meeting).

The WG felt there was a need to solidify the participation of the new partners and further develop the unique offering of the Flood Demonstrator as a science activity, building on the pilot but not repeating it. More outreach towards the GEO workplan and the water activities is encouraged. The Flood Demonstrator team will develop input for the fall SIT meeting and Plenary.

#### Seismic Demonstrator

Dorella presented the proposed Seismic Demonstrator Activity. She indicated it was strongly linked to the Sendai Framework implementation, and David Green encouraged her to make that point explicitly by indicating how it is linked. The Demonstrator will also work with GSNL on capacity building. The activity in the past was entirely focused on hazards rather than other components of DRM. Several participants wondered how to move from hazard to risk, how to address vulnerability and exposure? The team was encouraged at a local level to explore integration when these elements exist through other partners such as GEM. Could the demonstrator propose some case studies? The activity has put forward some data volume levels but warned that the rapid science product activity was a bit of an unknown, since it was based on events as they occur, and that over time the annual allocation may double due to this activity. The proposal will be finalized in the first week of April.

#### Day 3

The day began with a continuation of the seismic hazards demonstrator discussion. CNES indicated they were fine with the proposed quotas. DLR indicated they could not provide data in NRT due to their data

policy constraints. The EC asked that the table in the materials be changed to indicate that Sentinel-1 and 2 are EC missions, not ESA missions. ASI indicated that the quota looks fine but they need to do some internal verification. JAXA and CSA were not present at the meeting.

**Action M9/18** Contact CSA and JAXA to request data quota.

9:30	<p><b>13 – Joint session with International Working Group of the Satellite Emergency Mapping (IWG-SEM)</b></p> <ul style="list-style-type: none"> <li>● <b>Introduction of IWG-SEM membership and activities</b></li> <li>● <b>General discussion on possible collaboration</b></li> </ul>	Stephen Clandillon, Chair of IWG-SEM (SERTIT), all.
------	--	---

Stephen Clandillon, chair of the IWG-SEM made a detailed presentation on the group’s activities. Some members of the CEOS WG Disasters, including EC, DLR, and CNES, are also involved in this group. Other members include HOT-OSM, UN-SPIDER, Digital Globe, PDC, eGeos, AIT...

The group currently has an innovative project to look at how to use social media in NRT for flood mapping products. The group recently produced some guidelines and invited our WG to review and comment on them. The guidelines include an element dealing with quality control. A discussion ensued on uncertainty in risk and hazard mapping.

Simona asked if Stephen saw an opportunity to collaborate between the two groups. Stephen indicated they are very busy with their current work but that the CEOS WG was welcome to become involved. He also indicated that the CEOS WG could work on setting up a portfolio for the varied and interesting products they have showcased and establish a brief outline of best practices. This would include metadata aspects and how to make sure the user understands the products and in what way they should be users. Stephen mentioned the group should be targeting different user groups. Asked the group to have a look at what the IWG-SEM Guidelines do in this respect to see whether it’s a good idea to do something similar.

**Action M9/19** Send IWG-SEM Guidelines to WG for comment.

11 :00	<p><b>14 – Strategy for communications and engagement</b></p> <ul style="list-style-type: none"> <li>● <b>Target audiences</b></li> <li>● <b>Website update</b></li> <li>● <b>Pilot user testimonials</b></li> <li>● <b>Handbook distribution</b></li> <li>● <b>User engagement through demonstrators</b></li> </ul>	Simona Zoffoli, Andrew Eddy
--------	--	-----------------------------

Simona Zoffoli presented the current website and also the site for the CEOS WG on Climate. She felt this could be a model for the website update. The entry point would be a short text on the WG and its activities. The sub pages will be divided by theme rather than by pilot, and we will add a GSNL page under the geohazards theme (and rewrite the comparative table between GSNL and Seismic hazards and



Volcanoes). A category will be added for user feedback, and it will compile the feedback from the other sections. The WG members will be listed under an “active members” page.

**Action M9/20** Send website updates to Andrew and Simona.

It was decided that the glossy publication did not need a digital version. It would be better to have all relevant material sat the website, and to include a pdf to print section for each theme. It would be good to add to the front of the site a “map of activities” showing where the group is active in the world. The March webstory will be from the RO. The September webstory will be from GSNL.

It is not clear that Copernicus will be able to present at UR2018. If not, a member state could do it instead.

There is a need for an overview of the UR2018 week showing relevant activities for CEOS WG Disasters.

**Action M9/21** Produce overview of UR2018 week/agenda from WG perspective.

NASA will be sending 14 people to UR2018. It is a major outreach event. GEO-DARMA is planning a SC mtg during the week (Wednesday (9:00 – 11:00am, room TBD)

Simona requested that UK Space Agency make a presentation at the next WG meeting in September of their activities.

**Action M9/22** Presentation on UK Space Agency activities at next WG.

There was a discussion on whether we should continue the data tracking table. There was consensus to continue. Updates to the table should be sent to Jens with all DCT in copy.

11:45	<b>15 - News from agencies:</b> <ul style="list-style-type: none"><li>• <b>Round table of news from agencies</b></li></ul>	All
-------	--	-----

Each agency provided a short statement.

The UK Space Agency is looking to re-engage with CEOS, including WGD, WGISS (Data cube), CalVal, SDCG. The NovaSAR mission will be launched late this year, with 15% of data reserved for non-commercial purposes. There are currently 22 projects under IPP, and new projects are expected.

DLR and EUMETSAT will jointly lead Charter from April to Oct. 2018. DLR is funding a project with UNU and Bonn University ([www.zfl.uni-bonn.de/research/projects/evidenz](http://www.zfl.uni-bonn.de/research/projects/evidenz)) looking at AOIs in South Africa and the Ukraine, considering drought risk and satellite data, tied to Sendai indicators and related national needs. Results might be of interest for GEO-DARMA projects to come, and Jens will be happy to provide contacts.

JRC is working on a Global Drought Observatory.

NASA indicated that this sharing of projects was extremely helpful and wondered if it could continue offline through a shared document facility. Simona agreed to see whether it would be best to do this through the document management system at the CEOS site or another method.

**Action M9/23** Explore shared document systems to exchange project updates.

CNES will take over Charter lead from October. The SWOT mission (joint with NASA) will be launched soon and dialogue is required to see how this might support DRR activities, specifically in Flood activities.

12:15	<b>16 – Conclusion, Summary of follow-up action points and Next WG Disasters meeting</b>	
-------	--	--

The next WG meeting will be held, if possible, in conjunction with the Cities on Volcanoes meeting. It will be either the same week, (2-7 September) in Naples, or the following week (10-12 September) in Catania. INGV would be the host. This will be confirmed by early April. In the event this is not possible, Lorant Czarán has suggested Vienna and Budapest might also be possible venues for the fall meeting.

14:45	<b>17 – Site visit of European Commission's ERCC</b> <ul style="list-style-type: none"> <li>• Visit</li> <li>• General discussion on work of ERCC</li> </ul>	Francoise Villette Spyros Afentoulidis
-------	--	---

The EC offered participants lunch at the ERCC and then an in-depth visit was organized. The visit began with a presentation of ERCC activities by Syros Afentoulidis, followed by a visit of the operations centre.

Actions closed during WGD meeting #9:

#	Action	Actionee	Due	Status/ Comments
<b>M9/10</b>	Circulate information to the WG on the International Partnership Programme	David Hodgson	March 2018	Closed. E-mail sent during meeting.
<b>T20/1</b>	Circulate e-mail to pilot leads asking each to document any data access issues to be addressed in March at WG 9.	Andrew Eddy	15 January 2018	Closed.
<b>T20/2</b>	Share information on Haiti needs and follow-up with Landslide Pilot leads.	Andrew Eddy	15 January 2018	Closed.
<b>T20/3</b>	Share Demonstrator Proposals from each team with the Working Group	Demonstrator Leads	1 March 2018	Closed.
<b>T20/5</b>	Circulate UR 2018 proposals	Simona Zoffoli and Helene de Boissezon	15 January	Closed.
<b>M8/4</b>	Confirm the approach Copernicus will use with regard to data for R&R activation for Haiti (commercial data vs CEOS data).	Helene de Boissezon	Discuss at WG 9	Closed.
<b>M8/5</b>	Webstory on GSNL in March 2018	Stefano Salvi	End of February	Closed. Will be RO webstory for March 2018.
<b>M8/6</b>	DCT and SAC Chair to work together to come up with vision for improved working relationship between CEOS and GSNL.	Stefano Salvi and Jens Danzeglocke	WG 9	Closed. Discussion took place at WG 9
<b>M8/8</b>	Contact Pilar for civil protection contacts in Ecuador to obtain feedback on how satellite data	Dorella Papadopoulou	End of February	Closed.

#	Action	Actionee	Due	Status/ Comments
	was used after the earthquake			
<b>M7/8</b>	ESA Graphic bureau to produce a digital version of "glossy" report	Ivan Petiteville	Decide by end of January to proceed or not	Closed. Merged with website update.
<b>M7/10</b>	Ensure all pilots have PoC on website	Andrew Eddy	WG 9	Closed. Combine with website update.
<b>M6/24</b>	Prepare web story on RO	H. de Boissezon and A. Eddy	1 <sup>st</sup> week of October 2017	Closed.